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(54) Electrified cargo net for vehicles

(57) A cargo net for vehicles 11 includes interwoven thin metal filaments connectable to an electrical, high voltage source, the earth terminal of which is connected to the body of the vehicle. A person attempting to steal from the vehicle in motion will receive a non fatal electrical shock as soon as he touches the net while standing on the trailer body, the system, having been completely discharged resets itself within 1.5 seconds.

Alternative embodiments include sandwiching the conductive filaments between insulating sheets so as to resemble conventional tarpaulin.

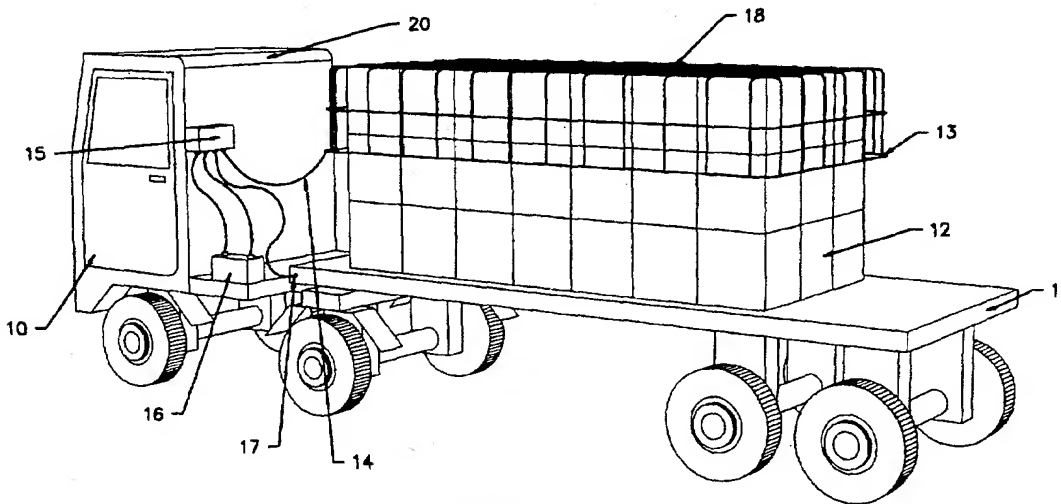


FIGURE 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

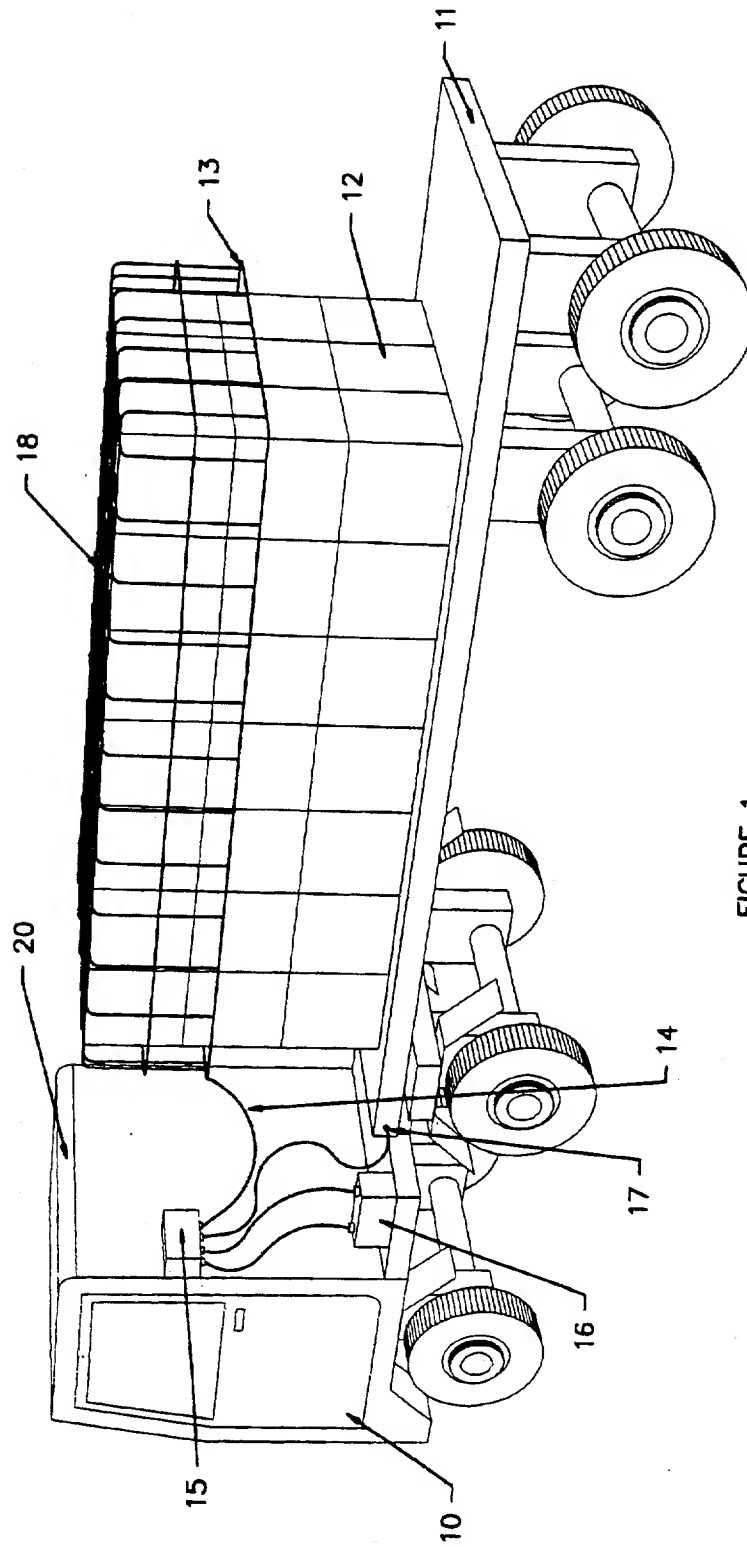


FIGURE 1

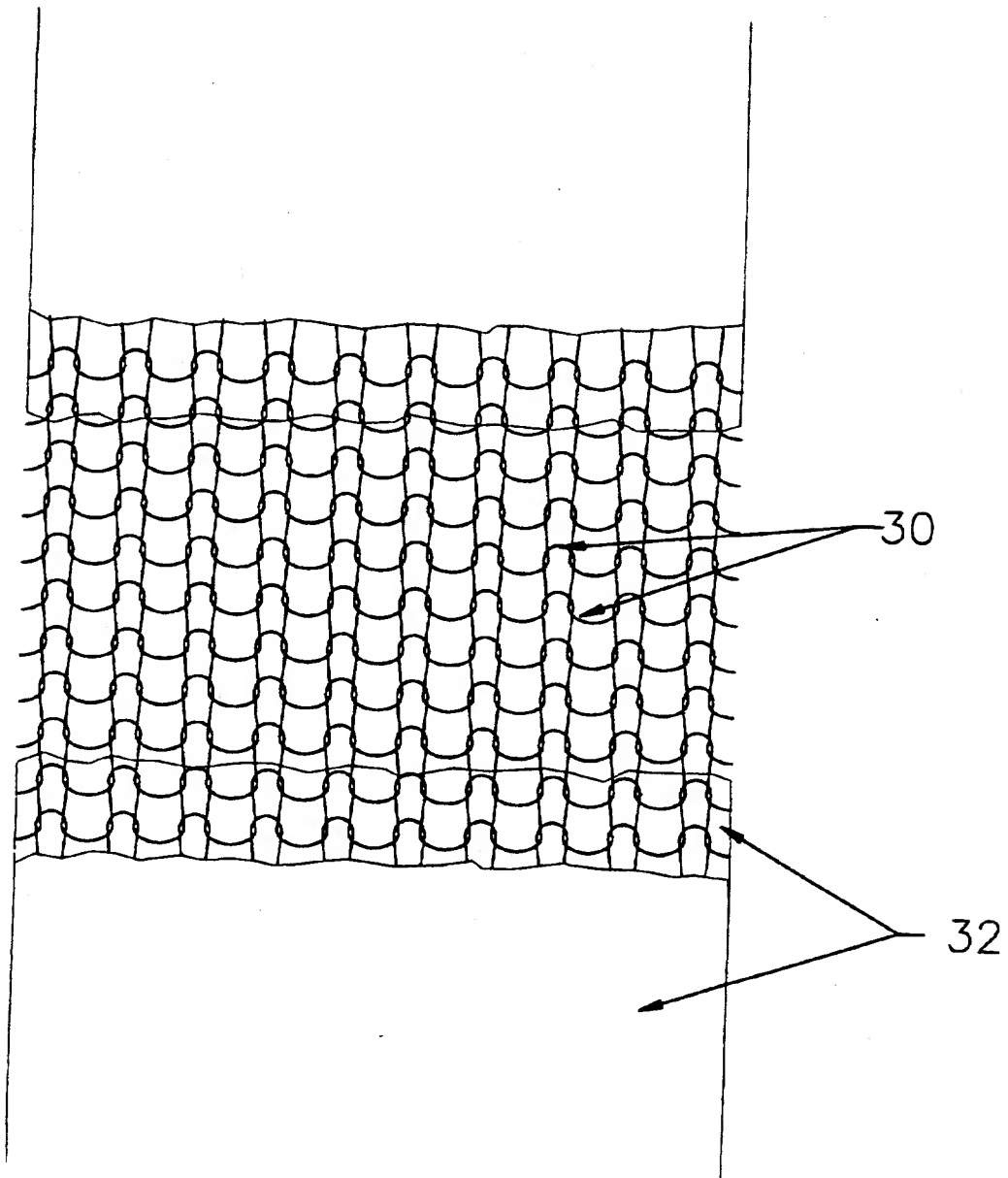


FIGURE 2

CARGO NET FOR VEHICLES**FIELD OF THE INVENTION**

This invention relates to a cargo cover for vehicles.

BACKGROUND OF THE INVENTION

Every year transporters lose large amounts of money as a result of thefts taking place en route to different road destinations. Most of these thefts take place while the vehicle is in motion.

Thieves wait until the vehicle is travelling down a steep gradient which requires them to travel in extra low gear at very low speeds. They then climb up the back, cut the cargo net or tarpaulin and drop the merchandise off the back of the truck into a bakkie following.

It is an object of this invention to provide a cargo cover which prevents or at least deters this type of theft.

THE INVENTION

According to the invention, a cargo cover includes a network of metal filaments incorporated therein and connectable to a power source, the earth terminal of which is connected to the body of the vehicle's trailer.

In one form of the invention, the cover comprises a net, the metal filaments being interwoven or otherwise incorporated in at least a portion thereof.

Thus as soon as a thief climbs onto the trailer and touches the net, the earth is broken, and the thief receives a shock. The shock retains him on the net for approximately 1,5 seconds, after which he falls off the net as his muscles relax involuntarily.

In one form of the invention, the electrified portion of the net comprises only that which covers the top of the load and a short distance down the sides, back and front thereof.

In the preferred form of the invention, the net comprises a suitable polymeric material such as polyethylene in strand form, with filaments of stainless steel woven into the braid which is then configured into the form of a net.

Also in the preferred form the power source comprises a combination of the vehicle battery and an energiser (commercially available) which converts the conventional 24 volt power source into a voltage of approximately 10 000 volts running through the network of stainless steel filaments. An insulated cable is provided as the link between the net and the power source.

This voltage is not lethal and results only in a severe shock to a thief. Furthermore there is no danger to the driver of the vehicle as the energiser is operable from within the vehicle cab, and the trailer is insulated from the road by its tyres.

Should a portion of the net be cut, the shock is administered, the voltage completely discharged and then reset within 1,5 seconds.

A further advantage of the net is that it cannot be disarmed by cutting even a large section of the net away. The net is constructed such that all the filaments are connected in series and that the voltage will always be able to pass through.

In another form of the invention, the cover comprises a network of filaments located between two sheets of polymeric material such as polyvinylchloride.

Alternatively, the filaments may be embedded or otherwise incorporated in the net or in a sheet of polymeric material.

In a modification or refinement of the invention the stainless steel filaments are woven into a mesh similar to chain mail and inserted between two sheets of polyvinylchloride. The steel mesh is connected to a power source as before.

The final product in this form of the invention appears to be a conventional tarpaulin, but is in fact electrified. Thus a thief attempting to slash the tarpaulin would receive a shock as described above.

A further advantage of the design is that when the cutting instrument pierces the mesh, the mesh bunches together around the point of entry and prevents further cutting taking place. Once again the mesh is configured as a series circuit and this type of damage cannot disarm the electrical circuit.

In an alternative form of the invention a solar energiser may be used.

In certain types of trailers, cargo covers comprise side curtains which are often hinged at the centre of the trailer along the top of the load to simplify off-loading operations. In order to secure these side curtains further, over-centre buckles and straps are provided above the load to exert a vertical pull on the side curtains.

In a preferred form of the invention the cover-centre buckles are incorporated in the electrical circuit which includes the power source and the network of filaments.

Electrification of this point prevents a person attempting to access the load without cutting the filamentous network.

The nets may further be in communication with an over-centre buckle located on the top side of the load. This is preferably also electrified to prevent access at this point.

Another feature of transport trailers is that they are often provided with a winch mechanism which is used to exert a horizontal pull on a cargo cover. The winch pulls the cover tightly around the cargo providing extra support for the load as well as ensuring that the cover offers minimal wind resistance.

In one form of the invention, the winch mechanism described above is incorporated in an electrical circuit including the power source and the network of filaments. Electrification of the winch provides a further guard against attempted unauthorised access without damaging the filament network.

Further, electrified jack points are provided at strategic positions around the net, which serve to secure the net over the load and prevent the system being disarmed by lifting the entire net over the load.

The system may only be disarmed by switching off the energiser.

EMBODIMENT OF THE INVENTION

Embodiments of the invention are described below with reference to the accompanying drawings in which:

Figure 1 is an isometric view of a rig and trailer with the net according to the invention in place;

and

Figure 2 is a cutaway portion of an alternative embodiment of the invention.

In the drawings a rig 10 and trailer 11 bears a load 12. The load is secured by means of net 13.

The containing filaments of stainless steel which are woven into the polyethylene braid before the braid is woven into net form.

The filaments are connected to energiser 15 by means of heavily insulated cable 14.

The energiser is operable by the driver from within the cab 20 and functions to convert power from the 24 volt battery 16 into a voltage of

approximately 10 000 volts, running through the network of filaments.

The energiser is earthed to the trailer body at 17 and consequently a person standing on the trailer body and holding the electrified portion of the net 18 breaks the earth and receives an electrical shock.

In Figure 2 an alternative form of the invention is shown in which the stainless steel filaments 30 are woven into a network resembling chain mail. This network is covered on each side by a sheet of polyvinylchloride 32 giving the overall appearance that it is an ordinary tarpaulin.

The filaments are electrified in the same way as the net of Figure 1.

This network of filaments has the further advantage that if an attempt is made to cut the tarpaulin, the knife penetrates the mesh resulting in not only a shock to the thief, but the mesh bunches together at the point of penetration and prevents further cutting.

The filaments in both the above are all connected in series such that damage to even a large area of the network still results in a voltage flow through the undamaged sections.

CLAIMS

1.

A cargo net for vehicles including interwoven in at least a portion thereof, thin metal filaments, connectable to a power source, the earth terminal of which power source is connected to the body of the vehicle's trailer.

2.

A cargo net according to claim 1 in which the earth of energiser is broken by the action of a person touching the net while standing on the trailer, resulting in an electrical shock to that person.

3.

A cargo net according to claim 1 or claim 2 in which the electrified portion of the net comprises only that which covers the top of the load and a short distance down the sides, back and front thereof.

4.

A cargo net according to any of the above claims in which the net comprises a suitable polymeric material such as polyethylene in strand form, with filaments of stainless steel woven into the braid which is then configured into the form of a net.

5.

A cargo net according to any of the above claims in which the power source comprises a combination of a vehicle battery and an energiser adapted to convert the low voltage battery power into a high voltage running through the network of stainless steel filaments.

6.

A cargo net according to claim 5 in which the high voltage is of the order of 10 000 volts.

7.

A cargo net according to any of the above claims in which the energiser is solar powered.

8.

A cargo net according to any of the above claims in which breaking of the earth or cutting the net results in complete discharge of the voltage followed by resetting thereof almost immediately.

9.

A cargo net according to any of the above claims in which the filaments are connected in series.

10.

A cargo net according to claim 1 in which the stainless steel filaments are woven into a mesh similar to chain mail and inserted between two sheets of polymeric material.

11.

A cargo net according to claim 10 in which the polymeric material is polyvinylchloride.

12.

A cargo net according to claim 10 in which penetration of the mesh by a cutting instrument effects a bunching together of the mesh at the point of penetration preventing further cutting.

13.

A cargo net according to any of the above claims in which electrified jack points are provided at strategic positions around the net, which serve to secure the net over the load and prevent the system being disarmed by lifting the entire net over the load.

14.

A cargo net substantially as described with reference to the accompanying drawings.